

UNITED STATES DEPARTMENT OF AGRICULTURE  
ANIMAL AND PLANT HEALTH INSPECTION SERVICE

1. REGISTRATION NO.  
23-R-0016

CUSTOMER NO.  
289

FORM APPROVED  
OMB NO. 0579-0036

## ANNUAL REPORT OF RESEARCH FACILITY (TYPE OR PRINT)

2. HEADQUARTERS RESEARCH FACILITY (Name and Address, as registered with USDA, include Zip Code)

UNIVERSITY OF PITTSBURGH  
3500 TERRACE STREET S1040 BIO SCI. TWR.  
PITTSBURGH, PA 15261

3. REPORTING FACILITY (List all locations where animals were housed or used in actual research, testing, teaching, or experimentation, or held for these purposes. Attach additional sheets if necessary.)

### FACILITY LOCATIONS/sites

(b)(2)High, (b)(7)(F)

(b)(2)High, (b)(7)(F)

### REPORT OF ANIMALS USED BY OR UNDER CONTROL OF RESEARCH FACILITY (Attach additional sheets if necessary or use APHIS FORM 7023A)

A. Animals Covered By The Animal Welfare Regulations	B. Number of animals being bred, conditioned, or held for use in teaching, testing, experiments, research, or surgery but not yet used for such purposes.	C. Number of animals upon which teaching, research, experiments, or tests were conducted involving no pain, distress, or use of pain- relieving drugs.	D. Number of animals upon which experiments, teaching, research, surgery, or tests were conducted involving accompanying pain or distress to the animals and for which appropriate anesthetic, analgesic, or tranquilizing drugs were used.	E. Number of animals upon which teaching, experiments, research, surgery or tests were conducted involving accompanying pain or distress to the animals and for which the use of appropriate anesthetic, analgesic, or tranquilizing drugs would have adversely affected the procedures, results, or interpretation of the teaching, research, experiments, surgery, or tests. (An explanation of the procedures producing pain or distress in these animals and the reasons such drugs were not used must be attached to this report)	F. TOTAL NO. OF ANIMALS  (Cols. C + D + E)
4. Dogs			101		101
5. Cats			63	15	78
6. Guinea Pigs		22	6		28
7. Hamsters	120	16			16
8. Rabbits	27	542	792		1334
9. Non-Human Primates	45	34	691	26	751
10. Sheep			36		36
11. Pigs	4	21	313		334
12. Other Farm Animals					
Calves			20		20
13. Other Animals					
Prairie Dogs	1		29		29

### ASSURANCE STATEMENTS

- 1) Professionally acceptable standards governing the care, treatment, and use of animals, including appropriate use of anesthetic, analgesic, and tranquilizing drugs, prior to, during, and following actual research, teaching, testing, surgery, or experimentation were followed by this research facility.
- 2) Each principal investigator has considered alternatives to painful procedures.
- 3) This facility is adhering to the standards and regulations under the Act, and it has required that exceptions to the standards and regulations be specified and explained by the principal investigator and approved by the Institutional Animal Care and Use Committee (IACUC). A summary of all the exceptions is attached to this annual report. In addition to identifying the IACUC-approved exceptions, this summary includes a brief explanation of the exceptions, as well as the species and number of animals affected.
- 4) The attending veterinarian for this research facility has appropriate authority to ensure the provision of adequate veterinary care and to oversee the adequacy of other aspects of animal care and use.

### CERTIFICATION BY HEADQUARTERS RESEARCH FACILITY OFFICIAL (Chief Executive Officer or Legally Responsible Institutional official)

I certify that the above is true, correct, and complete (7 U.S.C. Section 2143)

SIGNATURE OF C.E.O. OR INSTITUTIONAL OFFICIAL

NAME & TITLE OF C.E.O. OR INSTITUTIONAL OFFICIAL (Type or Print)

DATE SIGNED

(b)(6),(b)(7)(c)

11/22/2006

### APHIS Form 7023 Column E Explanation

This form is intended as an aid to completing the APHIS Form 7023 Column E explanation. It is not an official form and its use is voluntary. Names, addresses, protocols, veterinary care programs, and the like, are not required as part of an explanation. A Column E explanation must be written so as to be understood by lay persons as well as scientists.

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1. Registration Number: 23-R-0016

2/3. Species (common name) & Number of animals used in this study:

Cats (15)

4. Explain the procedure producing pain and/or distress.

N/A

5. Provide scientific justification why pain and/or distress could not be relieved. State methods or means used to determine that pain and/or distress relief would interfere with test results. (For Federally mandated testing, see Item 6 below)

N/A

6. What, if any, federal regulations require this procedure? Cite the agency, the code of Federal Regulations (CFR) title number and the specific section number (e.g., APHIS, 9 CFR 113.102):

Agency: N/A

CFR:

### APHIS Form 7023 Column E Explanation

This form is intended as an aid to completing the APHIS Form 7023 Column E explanation. It is not an official form and its use is voluntary. Names, addresses, protocols, veterinary care programs, and the like, are not required as part of an explanation. A Column E explanation must be written so as to be understood by lay persons as well as scientists.

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1. Registration Number: 23-R-0016

2/3. Species (common name) & Number of animals used in this study:

Non-Human Primates (26)

4. Explain the procedure producing pain and/or distress.

Pathogenic Effects of Bacillus anthracis lethal toxin and edema toxin in macaques

5. Provide scientific justification why pain and/or distress could not be relieved. State methods or means used to determine that pain and/or distress relief would interfere with test results. (For Federally mandated testing, see Item 6 below)

Justification from Protocol/ PI:

6. What, if any, federal regulations require this procedure? Cite the agency, the code of Federal Regulations (CFR) title number and the specific section number (e.g., APHIS, 9 CFR 113.102):

Agency:

CFR:

DEC 15 2006

### Column E Explanation

1) Registration Number: <u>23-R-0016</u>
2) Species used in study: CAT
3) Number of animals used in this study: 4
4) Explanation of procedures producing pain and/or distress and scientific justification why pain and/or distress could not be relieved:  Protocol # 0307005, "Vestibular Influences on Regional Vascular Resistance"  Justification from Protocol/ PI: Anesthetics will be employed during every surgery, and analgesia will be delivered after every surgery. Nonetheless, deep sedation would be required to assure that animals are not distressed by the postural instability and balance deficits that they experience immediately following removal of vestibular inputs. Such level of analgesia would not be prudent because it would impact on the data collected after the surgery and would also interfere with the animal's compensation for the effects of the lesion. It is well established in the human literature that compensation after vestibular lesions occurs more readily if movement is attempted than if the patient remains sedentary. Vestibular rehabilitation is based on the notion that improvement can only occur following vestibular lesions if subjects make frequent head and body movements. Thus, even if we were to sedate animals for several days following surgery, they would likely experience distress after the sedation is discontinued (as they did not compensate for the lesion after surgery). We thus deem it most beneficial both scientifically and for the long-term condition of the animal to refrain from providing sedation following removal of vestibular inputs. However, Ketoprofen will be provided after the surgery to ensure that the animals do not experience post-surgical pain.

DEC 15 2006

### Column E Explanation

1) Registration Number: <u>23-R-0016</u>
2) Species used in study: CAT
3) Number of animals used in this study: 6
<p>4) Explanation of procedures producing pain and/or distress and scientific justification why pain and/or distress could not be relieved:</p> <p>Protocol # 0508947, "Vestibular Influences on Mechanics of Air Movement During Breathing"</p> <p>Justification from Protocol/ PI:</p> <p>Anesthetics will be employed during every surgery, and analgesia will be delivered after every surgery. Nonetheless, deep sedation would be required to assure that animals are not distressed by the postural instability and balance deficits that they experience immediately following removal of vestibular inputs. Such level of analgesia would not be prudent because it would impact on the data collected after the surgery and would also interfere with the animal's compensation for the effects of the lesion. It is well established in the human literature that compensation after vestibular lesions occurs more readily if movement is attempted than if the patient remains sedentary. Vestibular rehabilitation is based on the notion that improvement can only occur following vestibular lesions if subjects make frequent head and body movements. Thus, even if we were to sedate animals for several days following surgery, they would likely experience distress after the sedation is discontinued (as they did not compensate for the lesion after surgery). We thus deem it most beneficial both scientifically and for the long-term condition of the animal to refrain from providing sedation following removal of vestibular inputs. However, Ketoprofen will be provided after the surgery to ensure that the animals do not experience post-surgical pain.</p>

DEC 15 2016

### Column E Explanation

1) Registration Number: <u>23-R-0016</u>
2) Species used in study: CAT
3) Number of animals used in this study: 1
<p>4) Explanation of procedures producing pain and/or distress and scientific justification why pain and/or distress could not be relieved:</p> <p>Protocol # 0607291, "Nonlabyrinthine influences on activity of vestibular nucleus neurons"</p> <p>Justification from Protocol/ PI:</p> <p>Anesthetics will be employed during every surgery, and analgesia will be delivered after every surgery. Nonetheless, deep sedation would be required to assure that animals are not distressed by the postural instability and balance deficits that they experience immediately following removal of vestibular inputs. Such level of analgesia would not be prudent because it would impact on the data collected after the surgery and would also interfere with the animal's compensation for the effects of the lesion. It is well established in the human literature that compensation after vestibular lesions occurs more readily if movement is attempted than if the patient remains sedentary. Vestibular rehabilitation is based on the notion that improvement can only occur following vestibular lesions if subjects make frequent head and body movements. Thus, even if we were to sedate animals for several days following surgery, they would likely experience distress after the sedation is discontinued (as they did not compensate for the lesion after surgery). We thus deem it most beneficial both scientifically and for the long-term condition of the animal to refrain from providing sedation following removal of vestibular inputs. However, Ketoprofen will be provided after the surgery to ensure that the animals do not experience post-surgical pain.</p>

DEC 15 2006

### Column E Explanation

1) Registration Number: <u>23-R-0016</u>
2) Species used in study: Cats
3) Number of animals used in this study: 4
<p>4) Explanation of procedures producing pain and/or distress and scientific justification why pain and/or distress could not be relieved:</p> <p>Protocol # 0609643</p> <p>Justification from Protocol/ PI:</p> <p>Spinalization will be performed at T0-T10 level under isoflurane anesthesia. Ketapofen (2-3 mg/kg, 3 days) will be given on the day following spinalization. Additional analgesics will be given according to the DLAR veterinarian's recommendations. After recovery from the anesthesia, the animal is able to eat, drink, and run around using the forelimbs. Currently there is no appropriate treatment to further alleviate any possible distress due to the animal's inability to move their hindlimbs after spinal cord transection, therefore, there are classified as category E.</p>

DEC 15 2006

### Column E Explanation

1) Registration Number: <u>23-R-0016</u>
2) Species used in study: Monkey ( <i>Cebus apella</i> )
3) Number of animals used in this study: 1
4) Explanation of procedures producing pain and/or distress and scientific justification why pain and/or distress could not be relieved:  Protocol #0604760-2  Justification from Protocol/ PI:  The Category E classification is indicated because the injection of herpes simplex virus type I (HSV1) into the spinal cord of these animals is expected to cause significant morbidity that cannot entirely be relieved with analgesic or tranquilizing agents. Briefly, under anesthesia and aseptic conditions, we perform a craniotomy on these animals for the purpose of injecting a conventional retrograde tracer into M1 or the PMv. This surgery is not expected to cause postoperative morbidity that cannot be relieved with conventional analgesics. After a 10-14 day period that allows for both the transport of the neuronal tracer and the post-operative recovery of the animal, the animal will undergo a second surgery. In this aseptic surgery, the anesthetized animal will undergo a laminectomy and the injection of the H129 strain of HSV1 into the cervical spinal cord. The animal will require a 4 day post-surgical period before euthanasia. It is during this 4 day period after the 2nd procedure that we anticipate a progressive paresis eventually involving all four extremities (beginning during the third day), as well as the potential for a neuropathic pain state (beginning on the first or second day; refer to Section 63 above). Whereas we will provide pharmacological therapies for pain relief (see Section 63), we cannot prevent or reverse the paresis. Although we plan on the use of lorazepam as an anxiolytic during this second post-surgical survival period, we cannot be certain whether this pharmacological agent will entirely relieve the degree of distress that the animal will experience as it finds itself unable to move its extremities.

DEC 15 2005

### Column E Explanation

1) Registration Number: <u>23-R-0016</u>
2) Species used in study: <u>Monkey (m. fascicularis / cyno macaque)</u>
3) Number of animals used in this study: <u>25</u>
4) Explanation of procedures producing pain and/or distress and scientific justification why pain and/or distress could not be relieved:  Protocol # 0505270A-3  Justification from Protocol/ PI:  <i>Bacillus anthracis</i> , the causative agent of anthrax, is a major bioterrorist threat. As such, it is considered a Category A agent by the NIH and CDC. A complete understanding of how <i>Bacillus anthracis</i> kills its human host is essential to the development of vaccines and therapeutics aimed at prevention and control in the event of a bioterrorist attack. Although some information is available from nonhuman primate studies where animals have been exposed to <i>B. anthracis</i> spores, there is no information about the specific <i>in vivo</i> pathogenic effects of the two major toxins, Lethal toxin and Edema toxin, in any primate system. This study will determine for the first time the specific events associated with inoculation of macaques with purified toxin at the molecular level.  Ten monkeys will be monitored until they show signs of illness associated with toxemia so that tissues from moribund animals can be analyzed. Since there is a considerable variation in the time to death following toxic exposure among animals, it is imperative that the animal display signs before he is euthanized. Anesthetics, analgesics, sedatives, and/or tranquilizers will mask these signs in treated animals. We will, however, visually inspect these animals every 2 hours so that they can be euthanized as soon as these signs are apparent and thus avoid death as an endpoint.